III. Water Quality Listings by Category

A. Overview of Category 5 – 303(d) List

iii. Temperature listings for fresh water

I. Additional Clarification of Temperature listings in Category 5; Review for Natural Conditions vs. Human-caused Sources for Fresh Waters.

Background

Temperature criteria in the 1997 water quality standards reads (using Class A waters as an example):

> Temperature shall not exceed 18.0°C (freshwater) or 16.0°C (marine water) **due to human activities**. When natural conditions exceed 18.0°C (freshwater) and 16.0°C (marine water), no temperature increases will be allowed which will raise the receiving water temperature by greater than 0.3°C.

Water Quality Policy 1-11 (revised September 2002) emphasizes that a measurement of temperature (or other pollutant in excess of a standard) is not a violation of the standard if the exceedance results from natural conditions. The difficulty is determining when you have natural conditions that are not influenced by human actions. The burden of providing data to support a natural condition call was on the submitter.

Prioritization of Temperature Listings: Natural Conditions vs. Anthropogenic Sources

During development of the Water Quality Assessment listing process Ecology did additional analysis to determine the potential human contributions that might be affecting temperature listings. All of the temperature listings were plotted on maps with land use activities (such as agricultural, forestry, and urban areas, and industrial sites) to assist in determining which waterbodies are not influenced by human activity. In addition each regional office has reviewed the listings to determine where potential temperature impacts exist due to human contribution and where they do not exist. As part of the TMDL process a much more detailed modeling and analysis will be done to determine the exact contribution of human related activities. In most TMDLS that have been completed for temperature, the impacts of temperature tend to be more on nonpoint activities versus point source dischargers although this is dependant on the stream size.

Of the main pollutant parameters causing 303(d) listings, the most significant increase in listings occurs with temperature. This increase appears to be due to increased temperature monitoring efforts in the last several years, likely spurred by increased salmon habitat protection efforts and increased watershed planning efforts that have occurred since 1998. The collection of continuous monitoring data through the use of temperature probes has also proven to be a cheap and reliable method for gathering temperature data. So, the combination of increased salmon habitat studies and

having a low cost reliable method for gathering temperature data has resulted in increased temperature listings.

A key issue raised by point source dischargers during the public review process for the Water Quality Assessment with regard to increased temperature listings was the potential for creating an unfair bias towards point source dischargers to 303(d) listed waters for temperature. One concern was that the public might have an unwarranted negative perception towards point source discharges, targeting them as the culprits for the temperature increases. The other concern was the possibility of being unfairly regulated for temperature, since EPA generally recommends that NPDES permits meet end-of-pipe limits to 303(d) listed waters if a TMDL has not yet occurred.

EPA Region 10 acknowledges in the "EPA Region 10 Guidance for the Pacific Northwest State and Tribal Temperature Water Quality Standards" (April 2003) that although Region 10's general practice is to require that numeric criteria be met at end-of-pipe in impaired waterbodies, there are instances where end-of-pipe effluent limits for temperature may not be necessary to meet applicable water quality standards and protect salmonids in impaired waters. EPA also acknowledges that temperature impairments in Pacific Northwest waters are largely caused by non-point sources. Page 43 of the Guidance states:

Section 301(b)(1)(C) of the CWA requires the achievement of NPDES effluent limitations as necessary to meet applicable WQS. EPA Region 10's general practice is to require that numeric criteria be met at end-of-pipe in impaired waterbodies (i.e., those that exceed water quality criteria). However, EPA Region 10 believes that in some situations numeric criteria end-of-pipe effluent limits for temperature may not be necessary to meet applicable WQS and protect salmonids in impaired waters. This is because the temperature effects from point source discharges generally diminish downstream quickly as heat is added and removed from a waterbody through natural equilibrium processes. The effects of temperature are unlike the effects of chemical pollutants, which may remain unaltered in the water column and/or accumulate in sediments and aquatic organisms. Further, temperature impairments in Pacific Northwest waters are largely caused by non-point sources. However, there may be situations where numeric criteria (or near numeric criteria) end-of-pipe effluent limits would be warranted, such as where a point source heat discharge is significant relative to the size of the river.

In order to address the concern raised by point source dischargers, Ecology will clarify in the Permit Writers Handbook how to address permitted discharges into 303(d) listed waters for temperature.

For the 2004 Category 5 list, Ecology is making statewide temperature listings a priority for resolving the complex issues around temperature. This decision is based on the following:

- Temperature listings have almost doubled from the 1998 303(d) list. There were 437 temperature listings on the 1998 list, and there are currently 817 listings on the 2004 Category 5 list. The current list does not identify which waterbodies are the highest priority for minimizing human impacts to important salmon habitat.

- Temperature needs to be dealt with at the watershed or basin level in order to truly deal with the complexities of the natural condition component of temperature and human influences that cause or contribute to increased temperatures.

- Work needs to be done with a broad array of stakeholders and tribal governments to better determine when a temperature exceedance is significantly impaired by human influences.

A list of waterbodies in Category 5 for exceeding temperature can be found in the following regional documents:

- Eastern Regional Office (WRIAs 32 – 36, 41 - 44, 53 - 62)
- Central Regional Office (WRIAs 30, 31, 37 - 49)
- Northern Regional Office (WRIAs 1 - 9, 15)
- Southwest Regional Office (WRIAs 10 -14, 16 - 29)

Specific Process for Identifying Temperature Listings for 303(d) List

1. Environmental Assessment Program (EAP) staff conducted initial review of monitoring data to determine if there were numeric exceedances of temperature. The results became the preliminary draft Category 5 list for consideration.

2. TMDL unit supervisors in all 4 regional offices were given the preliminary draft Category 5 temperature list for fresh waters in their region.. They then involved TMDL Leads for the different WRIA to consider whether the temperature listings were from natural conditions, or whether human sources (point and nonpoint) could be identified that could cause of contribute to the increased temperatures.

3. Staff were asked review fresh water listings to identify human sources that could cause or contribute to the increased temperatures. All listings that had human sources identified were left on Category 5, with the understanding that a TMDL study will sort through the natural vs. human influence on the river. Results of the review were that the majority of fresh water listings remained in Category 5.

Regional Review Process

Staff were asked to consider the following, which was captured in an Excel Spreadsheet:

1. Is there data or information that indicates the natural condition of the waterbody would be expected to exceed the numeric criteria?

See Excel Document column "**Natural Exceed**?"

No (stays on Category 5)

Yes (natural condition component)

Unsure (cannot determine what proportion of the exceedance is from natural conditions or human actions)

2. Are there anthropogenic sources or human activities in this area that could cause or contribute to exceedances of the pollutant from the naturally occurring condition?

See Excel Document column "**Human Influence**?"

No (Moves to Category 1)

Yes (Stays on Category 5)

Unsure (stays on Category 5 with expectation that TMDL study will determine what proportion of the exceedance is from natural conditions or human actions)

3. If **Yes** above, list known or expected sources below:

See Excel document column: "**Point Sources"**

DAM Dam
GPI-General Permit-Industrial
GP Muni = Muicipal General Permit
GPSW = General Permit-stormwater
Mines = MInes
Minor Muni = Minor municipal facility
Muni SW = Municipal stormwater
MI = Minor Industrial facility
Multiple = Many point sources in the area
NPDES = Water discharge permit
TG = Tidegate
UNK = Unknown

See Excel document column: "**Nonpoint sources"**

AG = Agriculture
DR = Dredging
DV = Development
EW = Engineered Waterways
FL = Floodplain
FP = Forest Practices
FSS = Failing septic systems
GZ = Grazing
LE = Lake effect
LV = Livestock
LF = Low flow
HWY =Highway
IM = Impoundments
IR = Irrigation withdrawals

RD = Road
RM = Riparian Mondification
SD = Sediment
SW = Stormwater
WW = Water Withdrawal
UR = Urbanization

4. If the natural condition exceeds the numeric criteria, are human causes from all human sources reasonably expected to produce more than 0.3 degree C increase to the waterbody?

See Excel document column: "**>0.3 C"**

Yes (stays on Category 5)

No (moves to Category 1)

Unsure (stays on Category 5 with expectation that TMDL study will determine what proportion of the exceedance is from natural conditions or human actions)

5. Include comments, as necessary, such as TMDL studies in progress or other relevant information

II. Regional Spreadsheets

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